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"Simple solutions assume simple futures, but every realistic indication is that the future will be more complex than the present" (Crawford and Gorman 1995).

Both challenges and opportunities are plentiful in libraries these days. A quick summary of the current situation is that technical services departments must do more with the same or fewer financial and human resources and, at the same time, become involved in new library initiatives. Karen Calhoun of Cornell University Library wrote recently that organizational and operational assumptions about technical services are changing. This is her summary of the challenges facing technical services:

- Growing user expectations for electronic and digital services
- Wide array of formats and types of materials
- Rapid technological change
- Rising prices for library materials
- Close scrutiny of library budgets and costs
- Organizational restructuring

(Calhoun 2003).

These challenges can lead directly to opportunities for productive change and growth. That point must be emphasized: challenges are opportunities. In examining the challenges on Calhoun's list, it is important to consider the opportunities that arise from each of them. There is every reason to feel optimistic about those opportunities.

First, let us consider the challenges posed by user expectations for electronic and digital services, and the necessity of dealing with many different formats and types of library materials.

What Do Users Want?

"Most library users want resources that they can use and that are immediately available, even if they are not necessarily the newest resources" (Crawford and Gorman 1995).

During a panel presentation "Journals: Hardcopy, Electronic or Document Delivery: What Are the Choices?" given at the Charleston Conference, November 6, 2003, Mary Page of Rutgers University Libraries spoke of providing access to 3 million books and 15,000 current journals at that institution, and yet onsite use was down. At the same time, use of electronic resources on and off-campus at Rutgers was rising steadily. In 1997, the budget for electronic resources was 5% of the total collection budget. By 2003, only six years later, expenditures on e-resources consumed almost 40% of the budget.

At Jackson Library, The University of North Carolina at Greensboro, the breakdown of expenditures in 2003 was comparable to that at Rutgers University Libraries in the same year. According to data in the 2003-2004 *Jackson Library Annual Report*, about 31% of library collection funds were expended on online subscription databases during that fiscal year, with an additional 8.5% spent on one-time online database purchases. That does not include expenditures on electronic journals and other electronic resources that were paid for from other (distance education) funds. In comparison, the expenditure on print books during 2003-2004 was relatively small, only 23% of the total. This is snapshot rather than trend data, and it cannot be assumed that the UNCG figures are user-driven. Nevertheless, the similarity to the spending pattern at Rutgers is striking.

We are experiencing a transition to a new type of library. Traditional materials like books, print journals, and audio-visual materials continue to pour in to our libraries. At the same time electronic resources and digital collections make it necessary to develop new workflows, learn to use new metadata schemes and standards, devise new, technology-based methods of processing, and adopt new tools like OCLC Connexion.

Janet Flowers of The University of North Carolina at Chapel Hill used the term "hybrid environment" at the 13th North Carolina Serials Conference in April 2004, where she moderated a panel discussion entitled "Impact of E-Resources". In discussing the management of both print and electronic resources, Flowers said that librarians have coped well with changes and ambiguities, and with the huge volume of digital materials they need to manage. She predicted that the "hybrid" situation will continue for the foreseeable future, and that we can expect additional work, and additional stress, in libraries for some years to come.

How does this transitional or "hybrid" situation work itself out in technical services? Consider serials management as an example. Libraries are moving many print journal subscriptions to print + online or online-only, and with electronic journals the emphasis is on providing access rather than providing the materials themselves. One serials subscription agent, Swets Information Services, predicts that the market share for electronic journals will increase from about 15%, measured in 2003, to 60% by 2008. Managing e-journal subscriptions, meaning ordering, renewing, paying, claiming and canceling, is much more complex and idiosyncratic than managing print subscriptions. For example, establishing and maintaining access to e-journals and databases can require painstaking work and more urgent attention than providing access to print serials. Cessation of online access can be a matter of immediate notice and concern to users, while delay in receipt of a print journal issue may be regarded much more tolerantly. Selection and ordering can be more complex and time-consuming for e-journals than print. Support staff placing orders for e-journals, or renewing existing subscriptions, find themselves fielding questions about IP ranges, domain names, and numbers of concurrent users. These questions, which may be unfamiliar to staff and not straightforward to answer, are of no concern in managing print journal subscriptions. Monitoring invoices and renewals for e-journals and electronic databases takes real vigilance, since access may be cut abruptly and with no notice from the provider.

Procedures for managing electronic resources are evolving differently at different libraries. At Jackson Library, responsibility for electronic resources is given partly to administrative committees, partly to the library's Acquisition and Catalog Departments, and partly to the library's systems department. For example, support staff in the Serials Acquisitions unit order, renew and pay for e-journal subscriptions, while a librarian in the systems area has the day-to-day responsibility of maintaining e-journal access for users. At other libraries there are fewer hands in the pot, and complete responsibility for journals in all formats remains within technical services. No single organizational or procedural model, however, has been commonly accepted as the ideal way to manage electronic resources.

Many Different Formats

"Librarians have done better at making sense of huge, heterogeneous databases than any other group, and should continue to do so in the future" (Crawford and Gorman 1995).

What opportunities result from working with electronic resources? Following are some highlights.

The familiar MARC format for cataloging has many strengths: it is flexible, adaptable to change, language-neutral, and it is widely understood in the library community. MARC format deserves the credit for the success of cooperative cataloging efforts (Tennant 2004). Many digital (electronic) resources now exist that library patrons would find useful, yet will never be cataloged using MARC. For many libraries, it is too slow and too expensive to organize these materials in that way. Instead, new metadata projects are becoming a significant area of work for catalogers. Non-MARC forms of metadata like Dublin Core, EAD (Encoded Archival Description) and XML are commonly now used in libraries. These formats can be applied in various ways,

depending on the context, audience, and purpose of the resource, and what data elements are available. The Library of Congress has developed an XML scheme called MODS, the Metadata Object Description Schema, that can carry selected data from existing MARC records, and also allows the creation of new descriptions. Non-MARC formats can be used for original cataloging of primary sources, or for EAD projects with archival collections. It is possible to use both MARC and Dublin Core to create records, possibly with the Dublin Core records stored in a separate database, and the MARC records being edited to indicate digitization.

Technical services personnel have the skills and abilities needed to succeed with this kind of work. As one technical services librarian has expressed it, we are pattern seekers and pattern finders. Anyone can learn and apply a metadata scheme, but will everyone do it well?

Roy Tennant wrote in the July 2004 issue of *Library Journal* on "Metadata's Bitter Harvest". He used the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), and harvested 100,000 bibliographic records that described free online resources held by five different libraries. Tennant described the result of this harvesting as "a mess", explaining that Dublin Core format had been applied with no rules to speak of. In descriptive cataloging, Tennant says, the collaborative community of users must apply a set of common guidelines and practices. To a trained and experienced cataloger, learning a non-MARC metadata format like Dublin Core and applying it in a standard way should be all in a day's work. All that cataloger needs is administrative support: support in attending workshops and training sessions, time to use online training modules, and time at work to allow practice with new metadata.

In acquisitions work, careful analysis of the core functions (ordering, receiving, and fiscal activities) is essential in determining the most efficient ways to acquire and process electronic resources. Marc Truitt of the University of Houston Libraries and Katharine Farrell of Princeton University Library have encouraged such analysis as a preliminary to the development of acquisitions standards for automated acquisitions processes. Marc Truitt created the AUTOACQ-L discussion list in 2002 to open an interchange of ideas on this subject, and Truitt and Farrell spoke on the need for automated acquisitions standards to an overflow crowd at the 23rd Charleston Conference in November 2003. They pointed out that current Integrated Library Systems provide for only very basic elements of acquisitions data, and there is a proliferation of local, stand-alone systems to compensate for that. Cataloging has a rule-based framework, but acquisitions does not. What is needed is a structured, standardized approach to thinking about acquisitions (Truitt and Farrell 2004). Developing such standards will be a very complex group effort and a difficult and lengthy process, as Truitt and Farrell readily acknowledge. Having well-defined standards for acquisitions data would smooth the way for day-to-day work, and for an event like an ILS migration. The effort begun by Truitt and Farrell certainly merits the continuing interest and involvement of the library acquisitions community.

Rapid Technological Change: Both a Challenge and an Opportunity.

At Jackson Library, University of North Carolina at Greensboro, changes and developments have been made in recent years that are typical of many libraries. All of the following are now well known and well accepted in technical services, where once they represented a departure from traditional ways of doing things:

- An integrated library system, based on a relational database (now DRA Classic, previously LS2000, and Sirsi Unicorn when a migration will be completed in 2005)
- "Side systems" (software applications outside the ILS), such as a Microsoft Access database that is used to track payments for subscriptions, and to produce custom reports
- Vendors' Web-based customer interfaces, such as YBP's "GOBI 2" and Baker & Taylor's "Title Source II"
- Technology-assisted workflows, like electronic data interchange (EDI) for invoicing of approval books

- Consistent use of Internet access as an integral part of acquisitions work
- Shifting from data entry (working on records one by one) to data manipulation (working on batches of records) with OCLC Connexion

If anyone doubts that computer technology truly makes library work easier, Natalie Palermo of Louisiana State University provided an example at the Sirsi SuperConference, held in St. Louis, Missouri in April 2004. Palermo gave a talk on EDI serials invoicing. After 3 months of testing with Sirsi, Palermo used the EDI process to load a serials invoice file from Ebsco. The file consisted of 44 invoices containing a total of 3,258 invoice lines. It would take a full-time worker weeks to enter that data manually, while loading the file electronically took only 2 minutes. The load was not quite complete: 7 invoice lines did not post at all, because of multiple copies being invoiced. Seven out of 3,258 invoice lines is a failure rate of .21 % (1/5 of 1 %). Most library managers could tolerate a failure rate as low as that.

How can technical services librarians continue to deal successfully with technological changes?

- We can update staff skills (for example, by introducing new metatdata schemes for cataloging).
- We can change workflows to take greater advantage of available technology.
- We can discover and re-think our assumptions. Sometimes technology forces us to make changes that are very productive improvements over the old ways of doing things.
- We need to learn what users think is truly important. In the spring of 2003, for example, Jackson Library administrators used the Web-based LIBQUAL+ survey to help determine and study user opinions. This survey, a product of the Association of Research Libraries, is designed to obtain data from users on their opinions of library service quality. Students, faculty and staff of the university answered questions in four broad areas: access to information, "affect" of service, library as place, and personal control (Library Service Quality 2003). Afterward, a working group was formed to study the survey results and recommend changes in both public and technical services practices, based on what was learned from LIBQUAL+.
- We can broaden the scope of technical services responsibilities and influence.

On the last point, broadening the scope of responsibilities, those of us who work in technical services need to be proactive in searching out new projects and new applications for our skills. For example, technical services personnel can support the digitization projects that are planned or underway at many libraries. Technical services personnel can organize and manage Web sites, and help to design, build and maintain digital library management systems and portals. Possibilities exist for participating in cooperative metadata programs for digital resources, similar to cooperative cataloging programs. At Jackson Library, when the Sirsi system is in place, it will be possible for librarians and support staff to generate reports from the ILS without help from systems personnel. In a year or so, library staff will be cataloging electronic theses and dissertations.

Technical services personnel can take advantage of enhancements to vendor services that have resulted from continuing technological changes, by working in partnership with vendors to replace routine, repetitive manual work. Enhanced vendor services soon to be available to Jackson Library include:

- Vendor Web interfaces (GOBI 2 from YBP) – online selection, ordering, reporting
- Integration of the ILS with vendor's system
- EDI capability and 9XX ordering with Sirsi
- Bibliographic services (OCLC PromptCat)

The major vendor at Jackson Library is Yankee Book Peddler (YBP). The author worked with librarians who are subject liaisons with academic departments, and with Acquisition Department staff, to make use of features of GOBI 2, the Web interface that YBP has developed for its customers. Presently GOBI is

used at Jackson Library to generate a variety of acquisitions and collection management reports, such as information on open orders, on titles shipped on approval, or reports of expenditures by LC class. GOBI 2 is also used as an online selection tool by librarians and teaching faculty. Selectors can have a subject profile created for them, and receive automatic e-mail alerts of new publications.

It will be possible to do much more with a vendor service like GOBI 2 when Jackson Library has an ILS that can be integrated with vendors' systems. For example:

- Selectors could be allowed to search the vendor's database and flag titles for ordering. This is not done with Jackson Library's current ILS to avoid the necessity of staff re-keying data.
- When Jackson Library moves to the Sirsi system, the two systems will be able to exchange data electronically. Acquisitions could enter orders directly in GOBI, use the GOBI 2 order export process, and receive a file of order confirmation records from YBP the next day. The file would be loaded into Sirsi using Sirsi's "9XX loader".
- There would be no need for pre-order searching, keying orders into the library's ILS, or downloading bibliographic records item by item. The loading would create brief bibliographic records (the order records), and update encumbrances in Sirsi.
- When the orders arrive, receiving or cataloging staff could download bibliographic records from OCLC, much as is done now. Alternatively, the vendor could send full cataloging records, and the order-level records would be overlaid electronically with these bibliographic records.
- A third alternative would be to use records supplied through OCLC PromptCat. PromptCat would match items with cataloging records according to the library's specifications, and create the file of records ready for pickup by the library.

Receipt and payment data could also be transmitted between GOBI and the library's Sirsi system. One way to do this would be to use the EDI process (Electronic Data Interchange), as is now done with invoicing approval shipments.

Similar services to YBP's GOBI are available from many other vendors.

Hard Times and High Prices

The Association of Research Libraries (ARL) reports that between 1986 and 2003, costs of serials for ARL libraries increased by 260%. This increase is 3.8 times the Consumer Price Index during that span of years. During the same period, monograph expenditures by ARL libraries increased by 66%, and library operating expenditures by 84% (Expenditure Trends 2002-03).

Price increases and difficult economic times have had their effect on technical services operations. They have resulted in:

- Close scrutiny of budgets and costs
- Lost positions
- Delays and backlogs
- Diminished quality of work
- Additional responsibilities assigned
- Resorting to outsourcing

Recently, Kathleen Wells of the University of Southern Mississippi sent a survey to technical services managers at 112 public universities in the southeastern United States. Wells wanted to determine the impact of hard times on library staffing and operations. Her survey covered the period from 1990 to 2004, and the results were published in the journal *Technical Services Quarterly*. Wells found that technical services departments were particularly hard hit by budget cuts and hiring freezes because administrators did their best to keep public desks fully staffed. Over 60% of the survey respondents had lost technical services positions, and cataloging was the area most affected. Over 70% of respondents said their institutions had lost librarians, and more than half had lost support staff positions. Eighty-four percent of the survey respondents reported that lost positions had resulted in delay or nonperformance of some work. The examples they cited most often were cataloging backlogs, delays in cataloging new types of materials (such as electronic resources), and lack of time for authority control work. Of course all of this

had direct repercussions for public service (Wells 2004).

Other transitions in cataloging departments have resulted from shortages of people and funds:

- There has been increasing acceptance of basic-level cataloging records.
- Some libraries have been copying bibliographic records from other catalogs. For OCLC member libraries, this is a very questionable practice.
- Catalogers in some libraries have been required to take on additional and often unrelated work, such as collection development responsibilities or public service desk duties.
- Some library administrators have tried outsourcing in attempting to reduce costs.

This leads to the subject of organizational restructuring, a tactic frequently used to counter financial problems.

Restructuring: How Should We Plan for Change?

"Libraries need incremental strategies and solutions for current and future problems" (Crawford and Gorman 1995).

How did the librarians who responded to Kathleen Wells' survey deal with their losses? Good or bad, these are the real-life expedients they put into place.

- Twenty-five percent outsourced some technical services functions. Wells called this is a relatively low percentage of respondents, and pointed out that outsourcing also has its costs (not only charges for services, but also in-house management costs).
- Where libraries in the survey actually lost positions, departments were reorganized to maximize the effectiveness of the remaining personnel. Merging departments was the most common strategy, put into effect by 48.5% of respondents. They combined Serials and Acquisitions departments, Cataloging and Acquisitions, Cataloging with both Acquisitions and Serials, Collection Development and Acquisitions, and Binding and Processing units.
- The libraries reduced the number of supervisory positions, resulting in flatter organizational structures.
- Work was shifted from professional librarians to support staff positions, or to student assistants.
- Support staff were cross-trained or re-trained, to allow more flexibility in assigning work.
- Managers streamlined workflow as a means of cutting costs, and took advantage of new technologies.
- Temporary staff were hired in some libraries, and in others, administrators looked for outside funding of positions.
- Some librarians formed strategy teams to set departmental priorities among their more limited resources. This could be considered a "triage" technique. The essential functions would be covered, but obviously, if resources are very limited, some things will not get done (Wells 2004).

A discussion group on "Creative Ideas in Technical Services" met at the ALA Annual Conference in Toronto in June 2003. Members of the group reported changes similar to those described by Wells:

- Librarian positions were reclassified to support staff positions in some libraries.
- Librarian positions were eliminated.
- Positions were lost through attrition, due for the most part to retirements.

The group reported that new librarian positions are more likely to be in systems than in technical services (Krempasky 2004).

In a presentation at the 13th North Carolina Serials Conference held at Chapel Hill in April 2004, Rocki Strader of Ohio State University listed some new titles for librarian positions:

- License Librarian
- ILS Workflow Librarian
- Digital Acquisitions Coordinator

It is not difficult to see in this list a definite change of emphasis.

What Opportunities can Organizational Restructuring Offer?

When procedures are streamlined, we:

- Make time for the more demanding areas of our work
- Have more time for training and related activities (like learning new technology and software)
- Replace repetitive tasks with new and more challenging and complex types of work

For example, efficient acquisitions procedures allow staff to focus on services to users, such as filling rush orders or orders for out-of-print titles, or satisfying complex requests.

A common type of restructuring is the trend toward merging acquisitions and cataloging functions. In some libraries, acquisitions staff members do basic-level copy cataloging. At the University of Virginia Library, for example, four "receivers" handle receipt of all materials, and also perform copy cataloging for 40% of the titles that are purchased from all vendors (*GobiWorks Profile* 2003). Members of support staff in many libraries now do more complex copy cataloging than they did at one time. In some libraries, paraprofessionals do original cataloging.

Another example of restructuring is the team approach that has been in place in some libraries for 10 or 15 years. Some feel that a team structure provides for greater efficiency in dealing with networked electronic resources, compared with a traditional organizational structure where different staff or departments treat tangible materials in discrete stages. Team structures require considerable time from their participants for frequent scheduled meetings and regular group consultations, and that time has its costs for the organization. Perhaps the most important consideration about organizational structure is this: does the structure make it necessary for people to communicate? As long as processes require that people share information and coordinate with one another, an organization can function successfully.

Coping with Change

To manage change effectively, a balance is needed among 1) who the people are and what they know, 2) the tools, technologies and methods (processes) used, and 3) the tasks that are to be accomplished. Coping with change requires:

- A continuous flow of information
- Increased organizational concern for staff development (on-the-job training for both professional librarians and support staff)
- Taking a "clean slate" approach to how work gets done
- Creating transitional roles for staff
- Respecting individual responses to change
- Understanding the emotional cycle of change
- Patience

Why Are Technical Services Important?

The traditional library organization was a system of pockets of highly focused expertise, departmentalized and given such names as Cataloging, Reference, Acquisitions, Systems, and so on. These functional units were organized within broad categories: Public Services and Technical Services. Now there is a shift, a crossing of organizational lines. Many working relationships exist outside of the usual reporting structures. This shift is the result of budget pressures, of technological changes, and an increased concern for providing streamlined services to users.

Technical services are an essential part of libraries. All library personnel, in every area of the library, are engaged in service. All are pursuing the same values and principles. Technical services functions are essential and interesting. Our context is changing, and the scope of our work is changing, but technical services people have knowledge and skills that are critical to the success of libraries. Let us continue to believe in that, and act on it.

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